

Joseph H. Plona
Site Vice President

6400 N. Dixie Highway, Newport, MI 48166
Tel: 734.586.5910 Fax: 734.586.4172

DTE Energy



10CFR50.73

May 22, 2009
NRC-09-0036

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington D C 20555-0001

Reference: Fermi 2
NRC Docket No. 50-341
NRC License No. NPF-43

Subject: Licensee Event Report No. 2009-001, "Manual Reactor
Scram in Response to High Turbine Vibration"

Pursuant to 10 CFR 50.73(a)(2)(iv)(A), Detroit Edison is hereby submitting the enclosed Licensee Event Report (LER) No. 2009-001. This LER documents a manual scram that occurred on March 28, 2009 when plant operators placed the reactor mode switch to shutdown as required by plant procedures in response to high main turbine vibration.

No commitments are made in this LER.

Should you have any questions or require additional information, please contact Mr. Rodney W. Johnson of my staff at (734) 586-5076.

Sincerely,

cc: NRC Project Manager
NRC Resident Office
Reactor Projects Chief, Branch 4, Region III
Regional Administrator, Region III
Supervisor, Electric Operators,
Michigan Public Service Commission

LE22
NRK

LICENSEE EVENT REPORT (LER)

(See reverse for required number of
digits/characters for each block)

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. FACILITY NAME

Fermi 2

2. DOCKET NUMBER

05000341

3. PAGE

1 OF 3

4. TITLE

Manual Reactor Scram in Response to High Turbine Vibration

5. EVENT DATE

MONTH	DAY	YEAR
03	28	2009

6. LER NUMBER

YEAR	SEQUENTIAL NUMBER	REV NO
2009	- 001	- 00

7. REPORT DATE

MONTH	DAY	YEAR
05	22	2009

8. OTHER FACILITIES INVOLVED

FACILITY NAME	DOCKET NUMBER
	05000

9. OPERATING MODE

1

11. THIS REPORT SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: (Check all that apply)

- | | | | |
|---|---|--|---|
| <input type="checkbox"/> 20.2201(b) | <input type="checkbox"/> 20.2203(a)(3)(i) | <input type="checkbox"/> 50.73(a)(2)(i)(C) | <input type="checkbox"/> 50.73(a)(2)(vii) |
| <input type="checkbox"/> 20.2201(d) | <input type="checkbox"/> 20.2203(a)(3)(ii) | <input type="checkbox"/> 50.73(a)(2)(ii)(A) | <input type="checkbox"/> 50.73(a)(2)(viii)(A) |
| <input type="checkbox"/> 20.2203(a)(1) | <input type="checkbox"/> 20.2203(a)(4) | <input type="checkbox"/> 50.73(a)(2)(ii)(B) | <input type="checkbox"/> 50.73(a)(2)(viii)(B) |
| <input type="checkbox"/> 20.2203(a)(2)(i) | <input type="checkbox"/> 50.36(c)(1)(i)(A) | <input type="checkbox"/> 50.73(a)(2)(iii) | <input type="checkbox"/> 50.73(a)(2)(ix)(A) |
| <input type="checkbox"/> 20.2203(a)(2)(ii) | <input type="checkbox"/> 50.36(c)(1)(ii)(A) | <input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A) | <input type="checkbox"/> 50.73(a)(2)(x) |
| <input type="checkbox"/> 20.2203(a)(2)(iii) | <input type="checkbox"/> 50.36(c)(2) | <input type="checkbox"/> 50.73(a)(2)(v)(A) | <input type="checkbox"/> 73.71(a)(4) |
| <input type="checkbox"/> 20.2203(a)(2)(iv) | <input type="checkbox"/> 50.46(a)(3)(ii) | <input type="checkbox"/> 50.73(a)(2)(v)(B) | <input type="checkbox"/> 73.71(a)(5) |
| <input type="checkbox"/> 20.2203(a)(2)(v) | <input type="checkbox"/> 50.73(a)(2)(i)(A) | <input type="checkbox"/> 50.73(a)(2)(v)(C) | <input type="checkbox"/> OTHER |
| <input type="checkbox"/> 20.2203(a)(2)(vi) | <input type="checkbox"/> 50.73(a)(2)(ii)(B) | <input type="checkbox"/> 50.73(a)(2)(v)(D) | |

Specify in abstract below
or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME

Joseph M. Pendergast – Principal Licensing Engineer

TELEPHONE NUMBER (Include Area Code)

(734) 586-1682

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU- FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU- FACTURER	REPORTABLE TO EPIX

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES (If yes, complete 15. EXPECTED SUBMISSION DATE) ☒ NO15. EXPECTED
SUBMISSION
DATE

MONTH DAY YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

At 0146 hours EDT March 28, 2009, the reactor mode switch was taken to shutdown in response to high vibration levels on the Main Turbine number 1 bearing. Reactor power had been reduced in preparation for a manual scram from below 25 percent power to enter into a unit refueling outage (RF13). The reactor protection system (RPS) performed as expected, and all rods were fully inserted into the core. Reactor water level reached a low of approximately 162 inches above top of active fuel and recovered to normal automatically without operator intervention. Reactor water level was maintained in the normal band with the Control Rod Drive System Supply. Reactor water Level 3 isolations occurred as expected. There was no maintenance or testing in progress that would affect high turbine vibration levels. Safety related plant equipment responded as expected to the manual reactor scram. The manual scram was inserted when turbine vibration levels on bearing number 1 reached 15 mils during the shutdown for RF13. The high turbine vibration was determined to be due to a High Pressure Turbine rub transversing bearing number 1. Cooling of the Moisture Separator Reheaters (MSRs) occurred early in the shutdown process, and it was determined that the rub was due to the MSR cool down process. The shutdown procedures will be reviewed in conjunction with vendor information and other industry operating experience to determine potential procedure enhancement.

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17. NARRATIVE (If more space is required, use additional copies of NRC Form 366A)

Initial Plant Conditions:

Mode 1
Reactor Power 24 Percent

Description of the Event

At 0146 hours EDT March 28, 2009, the reactor mode switch [HS] was taken to shutdown in response to high vibration levels on the Main Turbine [TA] number 1 bearing. Reactor power had been reduced in preparation for a manual scram from below 25 percent power to enter into a unit Refueling Outage (RF13). The reactor protection system (RPS) [JD] performed as expected, and all rods were fully inserted into the core. Reactor water level reached a low of approximately 162 inches above top of active fuel and recovered to normal level automatically without operator intervention.

Reactor water level was maintained in the normal band of 173 to 214 inches with the Control Rod Drive System after the scram. Reactor pressure control was maintained by the turbine bypass valves. The peak Reactor Pressure was 965.3 psig, within normal pressure control limits. Reactor water Level 3 isolations occurred as expected.

There was no maintenance or testing in progress that would affect turbine vibration levels. Safety related plant equipment responded as expected to the manual reactor scram. At the time of the scram all Emergency Core Cooling Systems (ECCS) and Emergency Diesel Generators (EDGs) [DG] were operable.

Reactor water level was maintained above Level 2, and as expected, none of the primary containment isolations or safety injection systems initiations associated with Level 2 occurred. Safety related plant equipment responded as expected to the manual reactor scram.

The high turbine vibration was attributed to a High Pressure (HP) Turbine rub transversing bearing number 1. Cooling of the Moisture Separator Reheaters (MSRs) [SB] occurred early in the shutdown process, and it was determined that the rub was due to the MSR cool down process.

Significant Safety Consequences and Implications

This event posed no significant safety implications because the reactor protection and safety related systems functioned as designed following the manual reactor trip. The transient was compared to the UFSAR transient analysis for the Manual Scram, and the actual response was enveloped by the UFSAR analysis.

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Therefore, the health and safety of the public were not affected by this event.

This event is being reported under 10 CFR 50.73(a)(2)(iv)(A), as an event or condition that resulted in manual actuation of the reactor protection system and a reactor scram. A 4-hour non-emergency notification was made to the NRC Operations Center at 0345 EDT on March 28, 2009 (EN 44942) in accordance with 10 CFR 50.72(b)(2)(iv)(B) for an actuation of the reactor protection system.

Cause of the Event

The manual scram was inserted when turbine vibration levels on bearing #1 reached 15 mils during the shutdown for RF13. The high turbine vibration was due to a HP Turbine rub transversing bearing number 1.

By comparing the shutdown for RF13 with previous shutdowns and with other industry events where cooling of the MSRs occurred early in the shutdown process, it was determined that the rub was due to the MSR cool down process.

Operations personnel followed the system operating procedures (SOP) for the shutdown process.

Corrective Actions

The shutdown procedures will be reviewed in conjunction with vendor information and industry operating experience to determine potential procedure enhancement. Improvements will be made where applicable.

This event is documented and evaluated in the Fermi 2 corrective action program. Other actions are being considered to address this event. These actions will be tracked and implemented by the corrective action program

Additional Information

A. Failed Components: None

B. Previous LERs on Similar Problems: None